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IN-SERVICE SUPPORT PLAN FOR ELECTROMAGNETIC ENVIRONMENT EFFECTS--ETC(U)
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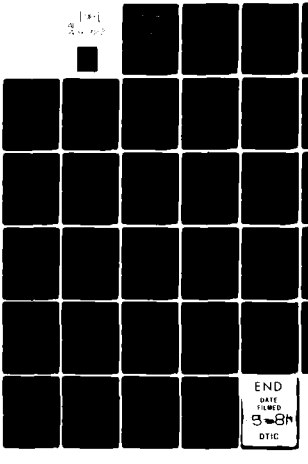

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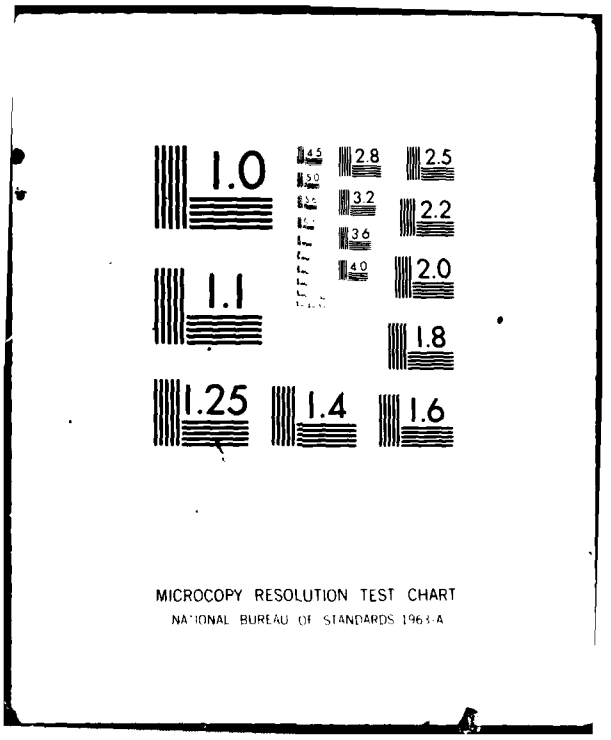
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LEVEL II

IN-SERVICE SUPPORT PLAN FOR ELECTROMAGNETIC ENVIRONMENT EFFECTS

DEPARTMENT OF THE NAVY
NAVAL MATERIAL COMMAND
TACTICAL ELECTROMAGNETIC SYSTEMS STUDY
ACTION COUNCIL

5 MAY 1978

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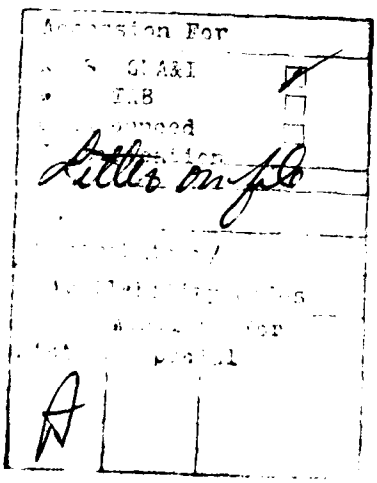

5 May 1978

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EXECUTIVE SUMMARY

This plan sets forth the programs and actions required for the recognition, reporting and corrective action management of electromagnetic environment (EME) effects deficiencies and problems in the in-service phase of naval operating systems life cycles.

The background and impact of EME effects problems are described, definitions provided and the parameters on which the plan is based are set forth. Problem correction programs and techniques are reviewed and candidate programs are modified to include EME effects deficiency correction. The actions necessary to systematize EME effects problem addressal are presented, providing for identification, reporting, problem managing, and monitoring. The recommendation for centralized management and the advantages of utilizing Integrated Logistic Support procedures are emphasized. Implementation is provided, with specific responsibilities clearly assigned.

EME effects deficiencies and problems include both intentional and unintentional radiation. This plan will cause the modification of existing reporting and corrective action programs and techniques to specifically include EME effects and enable reliable problem solution.

Continued management attention will be required for successful implementation of this plan, along with required resources support.

1. INTRODUCTION AND BACKGROUND

1.1 Purpose

This document provides a management plan whereby electromagnetic environmental (EME) effects deficiencies will be identified, reported, analyzed and managed. CNM will coordinate all of the existing programs under his jurisdiction through the Systems Commands assigned specific program responsibilities.

This plan responds to the tasking of CNM letter MAT-034:RBB/ELEX-095:RCW of 12 April 1976, which directed the development for the Naval Material Command of detailed plans to ensure that the deleterious aspects of EME are adequately addressed throughout the acquisition cycle of systems and equipment.

1.2 Background

SECNAVINST 2410.1B, OPNAVINST 2410.1C, and the CNO statement of policy, in letter Ser 987P6/69884 of 25 November 1975 (System Mission Survivability/Operability in the Electromagnetic Environment), provide major policy thrust for EME management. NAVMATINST 2410.1A of June 1974 assigns responsibility for EMC within the Naval Material Command; with NAVMATINST 10380.9 requiring EMC considerations throughout the life cycle of Navy electronic/electrical equipment. Despite the clearly enunciated policy, EME problems continue to arise, and many identified problems remain uncorrected. A major contributing cause is the lack of management emphasis on EME effects control.

The identification and treatment of EME effects are comparable for any system or equipment in fleet use, although the degree of complexity and scope may vary widely. In general, EME problems fall into one of two categories, either system-generic or procedural. System-generic problems can be traced to inadequate requirements during acquisition (research and development specifications, test and evaluation and other phases), inadequate coordination among coexisting system requirements, incomplete testing, incomplete system integration and improper physical configurations. Procedural causes include those in-service deficiencies arising from improper installation, inadequate maintenance and repair, misinterpretation of critical technical documentation, inadequate configuration control, poorly defined logistic support and lack of consideration for systems integration. These categories of basic deficiency causes serve as primary

guidelines for corrective actions implementation. The nature of individual EME deficiencies is such that the same victim/source/mechanism is likely to recur on more than one platform of a single type, with the same system configuration. The recognition of similar problems can, however, be obscured by widely differing reporting processes, e.g., varying terminology, formats and observer proficiency. EME terminology and reporting are subject to considerable improvement through an improved and standardized reporting and corrective action system.

1.3 Scope and Content

Since the electromagnetic environment (EME) can adversely affect all Navy electronic, electrical, electro-optical, electromechanical and electroexplosive systems, as well as personnel and fuels, adequate attention must be applied to management of the EME and its associated disciplines.

This plan is based on the recognition that electromagnetic environmental effects are not constrained by artifically defined boundaries for weapon systems, platform classifications, or organizational structures. The employment of accepted techniques for managing and auditing the effectiveness of interfacing fleet programs and reporting systems must be emphasized (in integrated logistic support plans and operational logistic support plans). This plan does not envision or require the establishment of new reporting or corrective management systems, but instead provides for the cost-effective application of existing systems. It is the adaptation, management, application, and control of procedures and techniques for EME effects corrections which this plan addresses. The broad disciplines of Integrated Logistics Support provide a framework which should assist in the management and resolution of EME problems. Existing reporting and data systems are logically expandable to include EME effects in the total spectrum of fleet problem correction.

There are many established programs and procedures existing within the Navy for the reporting and correction of EME effects problems. A concerted effort has been made to examine them for applicability and potential adaptation to EME effects. Existing in-service engineering programs which provide comprehensive corrective action management will be employed for the long-term resolution of fleet EME deficiencies.

1.4 Definitions

Electromagnetic Environment (EME) effects are defined as the aggregate phenomena associated with electromagnetic radiators and collectors in coexisting operational systems. For fleet operational purposes this includes Electromagnetic Compatibility (EMC), Electromagnetic Pulse (EMP), Electromagnetic Vulnerability (EMV), and Electromagnetic Safety (EM Safety). The term EMC as applied to naval systems is the capability of platform-located systems, equipments and devices to operate in their intended electromagnetic environment at design levels of performance without unacceptable degradation as a result of electromagnetic interference. EMC applies both to intrasystem and intersystem phenomena. In-service engineering is defined as the management and technical actions of Integrated Logistics Support and Maintenance Engineering after transition to fleet service from the acquisition phase of the system life cycle. In-service engineering includes the post-acquisition functions of basic design and production support, often based on feed-back from corrective actions to eliminate fleet-reported deficiencies. Deficiency reporting and corrective action assignments as provided in various directives and other documentation will require modification to accommodate this plan. The definitions of NAVMATINST 2410.1A (Electromagnetic Compatibility in the Naval Material Command; assignment of responsibilities) are applicable, in planning and for establishing criteria for EME actions.

1.5 Problem Areas

The major constraints which reduce effective coordination and control of in-service EME effects problem correction are:

- Lack of central authority for overall management
- Lack of awareness/utilization by program managers of available Navy in-house engineering capabilities (management versus engineering)
- Duplication of efforts among SYSCOMs and field activities
- Lack of regulated, centralized storage and retrieval system for information gained from correction of previous problems

1.5.1 Lack of Central Authority

The existing office of the Director, Tactical Electromagnetic Programs (ELEX-095), is tasked in his Charter, ". . . to exercise for the CNM centralized management, assessment and planning of the NMC TEMP program . . ." The decentralized modus operandi of the NMC and the relatively autonomous

procedures among the SYSCOMs has militated effectively against the ability of this office (ELEX-095) to discharge its responsibilities in management. It has has not been supported by adequate program priorities or by a unified SYSCOM support to its intended function. Thus, efforts to correct in-service EME effects problems are fragmented and ineffectual. Procedures must be established whereby CNM is apprised, on a routine basis, of EME effects deficiencies and status of efforts to evaluate and correct them. By utilizing on-going programs, with an executive monitoring system for the CNM coordinator, delays and other problems can be minimized or eliminated.

1.5.1 Lack of Awareness/Utilization by Program Managers of Available Navy In-House Engineering Capabilities (Management Versus Engineering)

At present some program managers, division directors, and equipment managers by-pass existing Navy in-house engineering support organizations, and directly task contractors. There is an inclination to establish program-unique data systems, and too frequently become involved in detailed direction of controls to the detriment of overall management. These actions result in sub-optimal application of available expertise, in delays, and in added expenditures of resources. In NAVSEA, the Electromagnetic Effectiveness Branch of NAVSEC is available to address EME effects problem correction for program managers. Though each SYSCOM has assigned EMC responsibility within the SYSCOM, the levels of the organization, the use by other groups within the SYSCOMs, and the authority and responsibility are, at best, marginal. SYSCOMs must direct that EME problem management capabilities are in fact available, and that program managers, division directors, branch heads and equipment and subsystem project engineers employ them.

1.5.3 Duplication and Fragmentation

The correction of in-service EME effects problems is not handled as a concerted, coordinated effort either within the Systems Commands or by field activities. Duplication of EMC effort exists within NAVELEXSYSCOM and NAVSEASYSCOM, because no single organization has been assigned overall coordination authority for EMC. For example:

- NAVSEA (06T) tasks for and manages SEMCIP surveys.
- NAVSEC (Code 6174E) responds to NAVSEA and Fleet EMC task assignments.

- NAVSECNORDIV performs EMC tasks for a variety of tasking agents.
- NAVELEX (System Engineering Center, Vallejo) conducts fleet sponsored surveys.
- Various naval shipyard combat systems groups perform EMC surveys as follow-up to major ship overhauls.

On occasion, more than one survey has been made on ships of the same class. Survey teams have not been aware of previous or concurrent surveys and hence have duplicated efforts.

Within NAVSEA the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP), has as one of its subprograms a rapid response capability. This is not, however, coordinated with the Direct Fleet Support (DFS) Program, also managed by NAVSEA, which has as its primary purpose rapid response to fleet materiel problems. The latter does not address problems of any specific nature, but EME problems could logically be included. In NAVAIR and NAVELEX, similar situations exist, with the complete absence of EME effects in material problem correction programs resulting in fragmentation of efforts and capabilities. Coordination, at the SYSCOM level, and with the CNM Director, TECS (Tactical Electromagnetic Coordination and Support) monitoring and advising, will result in economies and more timely EME effect problem correction.

1.5.4 Information Storage and Retrieval System

Information which should be available on previously analyzed and corrected in-service EME effects problems is not centrally or readily available for use in assessment of new problems as they occur. When faced with a problem at present, the activity assigned to its investigation and correction must either rely on its own experience or query other activities on a basis of judgment as to likelihood of experience. This often results in unnecessary duplication of previously expended effort, in delay in problem correction, and in unnecessary expenditure of resources. Data banks exist with varying levels of responsiveness. They must, therefore, be reorganized so as to be mutually supportive. Further, their content and availability must be made known to potential users. The reliability and content of these systems must be standardized through coordinative efforts of CNM and the SYSCOMs.

2. DEFICIENCY SURVEILLANCE PROGRAMS

2.1 General

There are many avenues in the Navy by which operating units can inform cognizant authorities of problems and deficiencies. They range from very broad in scope to the very specific for unique equipment. Similarly, there is a large variety of management procedures to identify and correct problems. Some are characterized by formalized reporting systems, formatting, data storage and retrieval, assignment of responsibility for correction, and tracking. Others are essentially monitoring techniques, designed to ensure that other established programs are carried out. Some are computer based, while others have no organized data bank capability. Sponsoring and controlling levels range from the office of the CNO through the SYSCOMS to the field activities. Many systems exist for correcting and reporting deficiencies; although they represent different levels of effectiveness there is a requirement for coordination within the Navy.

2.2 Review of Programs

An extensive review of reporting and deficiency corrective procedures and programs was made. DOD, SECNAV, OPNAV, NAVMAT, SYSCOM and Fleet level directives were examined in detail. Personal interfaces were established in OPNAV, NAVAIR, NAVSEA, NAVELEX and certain field activities to ensure that purpose and scope of programs were not misinterpreted, and to determine the receptivity of programs to introduction of EME effects deficiencies.

From the effort described above, certain programs and procedures were selected as being potential candidates for EME effects deficiency management. Programs were examined in the context of ability to accept EME effects considerations without denigrating the existing program or procedure.

The evolutions required in order to reliably effect correction of EME deficiencies are:

- Identification
- Collection
- Assignment for correction
- Problem solution and validation
- Monitoring and feed-back
- Report of completion

The programs and procedures used in deficiency correction can be grouped into three major categories - identification, reporting, and corrective action management. Examination of documentation and meetings with various sponsors has enabled the categorization of programs/procedures for direct use in correcting EME effects deficiencies.

Selection criteria were used for EME programs and procedures. The criteria were: (1) regularization of the program, i.e., is it a standardized procedure, (2) fleet-wide applicability, (3) widely disseminated, (4) general acceptance by users, (5) adaptability, (6) acceptance of EME effects inclusion by sponsoring authority. This was done to ensure a high order of reliability in accomplishing needed fixes, to avoid redundancy and to determine whether the program/procedure under examination could accept inclusion of EME effects without modification or overload. A summary of salient features of programs selected is provided in annex A.

2.3 Problem Identification

There are two types of problem identification which can initiate the chain of events leading to correction.

The first is that made by operator or maintenance personnel in the normal use of systems or equipment in the fleet environment. In this case, those in daily contact with the system/equipment must have the expertise to recognize that a problem or deficiency exists, and that it is due to EME effects. This, in turn, points to training as a key need. A Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) Navy Training Program, issued 20 October 1976, should serve as a starting-point model for specialized training in Fleet EME.

The second form of problem identification is that which comes about through tests or inspections, nearly always involving observers, engineers or technicians external to the operating unit. When problems are disclosed either in normal operation or maintenance, or through tests or inspection, they must be recognized, categorized and logged. There are two NAVSEA programs which are specifically designed to identify EMC effects problems. These are the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) and the Fleet Electromagnetic Readiness (FEMR) Program.* Other programs which verify the operation of systems and equipment, but which do not normally disclose EME

*All programs and techniques mentioned in this section are summarized in annex A.

effects discrepancies, are the Combat Systems Pre-Overhaul Test and Inspection (POT&I), the Combat Systems Readiness Test (CSRT), the Combat Systems Readiness Review (CSRR) and the Ship's Maintenance and Material Management (3-M) System. Directives must be modified to positively inject examination and accounting of EME effects into these programs and to provide participants with requisite training.

2.4 Reporting

Identified problems must be reported from their location to a manager who can initiate corrective action. Two programs providing for the reporting of shipboard EME effects deficiencies are SEMCIP and FEMR. These programs can inform cognizant managers of problems in EME. In normal fleet operations the Casualty Report (CASREPT) is the major vehicle by which problems which reduce the unit's capabilities are reported. However, EME effects are not specifically addressed in governing documentation for CASREPTs, nor are any generally considered as system/equipment problems in operating units. The problems of EME effects require recognition in CASREPT directives. The Commanding Officer's Narrative Report (CONAR) is another means by which problems are addressed, Navy wide. As in CASREPTS, however, EME effects problems are not mentioned in controlling directives. The CONAR, which is submitted only quarterly, is primarily useful in the tracking rather than in the reporting of problems.

2.5 Problem Management

Problem management encompasses collection (receipt of reports), preliminary analysis, assignment of responsibility for correction, monitoring of progress, and reporting of actions taken, progress and completion.

There are various programs and procedures which manage problem correction for designated systems or equipments. Those identified for potential use in EME effects correction are the Aviation Weapons Corrective Action Program (AWCAP), which addresses air-launched weapons; the Surface Missile System/Deficiency Corrective Action Program (SMS/DCAP), for surface missile systems; Detection and Response Technique (DART) which monitors designated high-problem-incidence of shipboard systems; Direct Fleet Support (DFS), which responds to specific fleet requests for fleet maintenance problem correction; the Naval Aviation Logistics Data Analysis (NALDA), program which is a data base and

information retrieval system for the NAVAIR logistics community; the Engineering Improvement Program (EIP), providing an investigative process for material deficiencies reported through the Naval Aviation Maintenance Program; (NAMP, OPNAVINST 4790.2A) and Project INTERCEPT which statistically identifies support problems. Each systems command should provide for single-point coordination of such problems. Additionally, designated corrective action programs must be expanded to manage all electromagnetic systems/equipment problems.

2.6 Problem Solution and Correction

The cognizant SYSCOMS, their agents and field activities such as the laboratories, engineering centers and repair facilities, operate within established, dependable lines of communication. By use of designated focal-point activities to receive deficiency/problem reports, the assignment of solution, correction and tracking tasks can thus be within established channels and responsibilities. The flow of actions and information which would result is presented graphically in figure 2-1.

2.7 Miscellaneous Actions

2.7.1 Observer Training

Specific programs must be modified to assure highly motivated and trained Fleet personnel are placed in positions to initiate formal EME deficiency reports. The human factors and technological refinements involved must be matched insofar as possible to assure high reliability in the observation of reported EME effects phenomena. The aformentioned SEMCIP training plan model should be used as a base line.

2.7.2 Technical Documentation

In-service documentation for EME effects deficiency reporting must be modified, so as to minimize burdens to fleet operations personnel. The reporting of EME effects deficiencies will follow established security and message flow practices.

2.7.3 Corrective Action/Data Base Operations

A centralized collection of EME effects deficiency reports is needed in each Systems Command to facilitate incident identification and corrective action narratives with statistical correlation and retrieval capabilities. Periodic

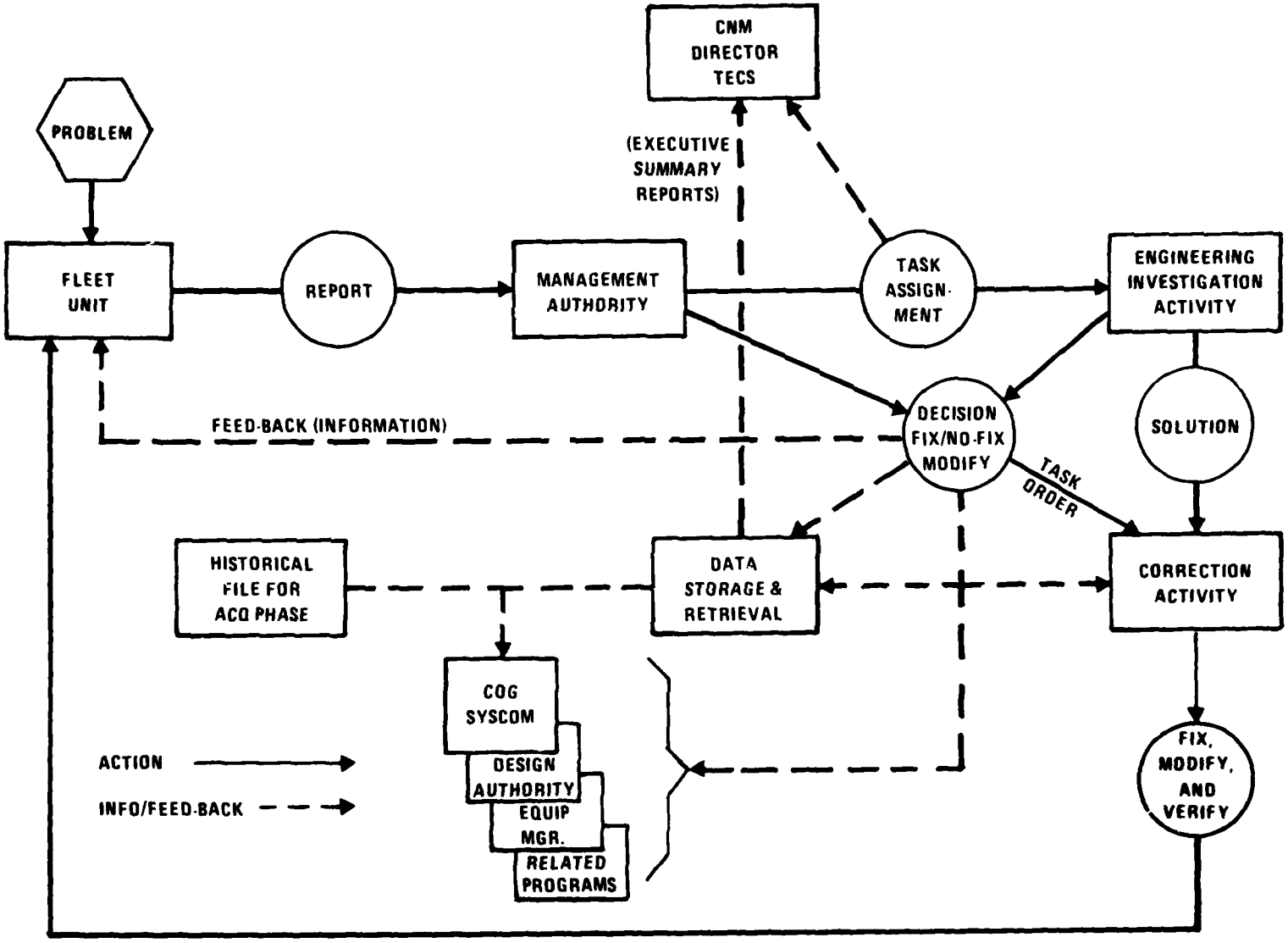

FIGURE 2-1. IN-SERVICE EME EFFECTS PROBLEM DATA FLOW

publications of active and historic data can then be provided to serve the EME effects corrective action community and the Director, Tactical Electromagnetic Coordination and Support (CNM).

2.7.4 Problem Resolution Criteria

Each cognizant SYSCOM must develop and issue a technical-management policy manual for application of corrective action resources. Each SYSCOM will provide technical and operational environment criteria so that EME effects problems can be placed in their order of criticality and addressed.

3. REQUIRED ACTIONS AND IMPLEMENTATION

Reliable management of in-service EME effects problems requires several actions. They are:

- Specific inclusion of EME effects in selected problem reporting and management program.
- Expansion of corrective actions programs for electromagnetic systems/equipments.
- Coordination of problems identification, reporting and management systems.
- Standardization of data storage and retrieval.
- Establishment of a functionally effective CNM management structure.

The end product desired is a reliable, coordinated series of actions that will positively, yet economically, manage in-service EME effects problems from detection through correction and implementation/installation.

3.1 Inclusion of EME Effects in On-Going Programs

In section 2, various programs and techniques were identified as being in use for identification, reporting and managing EME problems correction. Few of them specifically address or include EME effects. In order to ensure that EME effects are addressed, their problem management must be clearly enunciated in controlling directives and documentation (CNM and all Systems Commands). The following programs are candidates for modification:

- Identification - POT&I, CSRR, CSRT, 3M and EMSORT
- Reporting - CASREPT, CONAR
- Problem management - DART, DFS, NAVELEX Fleet Liaison Program, NALDA, EIP, AWCAP, SMS/DCAP and COMMCAP.

3.2 Program Development

Corrective action management programs which are in existence specifically address certain systems or types of equipment. At present, the corrective action programs which would provide for EME effects problem recognition in the area of communications equipments (COMMCAP) is partially developed. AWCAP and SMS/DCAP are operational but do not include EME in their current format. Eventual expansion to include all electromagnetic systems/equipments must be considered fundamental to successful implementation of this plan.

3.3 Coordination

The inclusion of EME effects in separate and sometimes not mutually supporting programs will only partially provide for systematized management of EME effects problems. Without integration of EME effects, various programs utilized could be duplicative, nonresponsive and in general a fragmented group of mismatched efforts. Thus, problem flow coordination is vital to in-service EME effects problem management, if corrections are to be reliably accomplished. The direct coordination of this effort is the responsibility of the SYSCOMS, with the Director, TECS (CNM), ensuring implementation. The direct support effort for this program will be provided by the SYSCOMs and program managers. Figure 3-1 displays this relationship schematically.

3.4 Data Storage and Retrieval

The available data storage systems of the various programs supporting in-service EME effects problem management will play a major role. EME effects data should be included in the data systems integral to the various participant programs. However, these data banks will be accessible and their existence clearly known to all Navy participants. In this way, information needed to solve current problems can be obtained without the necessity of expending limited resources.

3.5 Management Structure

In order for CNM to accomplish an effective consolidation of EME effects problem management, support by each Systems Command and each CNM project manager is required. Enforcing CNM's responsibilities and authority to embrace the long-term in-service EME effects objectives will require the following actions:

a. Provide necessary in-service support to all fleet units to correct/minimize/eliminate EME effects deficiencies on or between systems and platforms.

b. Emphasize the CNM role, with increased scope of responsibility, and provision for support by management. (Expand EME effects closed-loop corrective action system through Fleet and shore capabilities.)

c. Establish management controls for EME planning, programming, and budgetary matters through periodic evaluation of Navy EME effects, standards and criteria for waiver management during in-service life cycle.

d. Define technical/management instructions in support of in-service EME evaluation and correction.

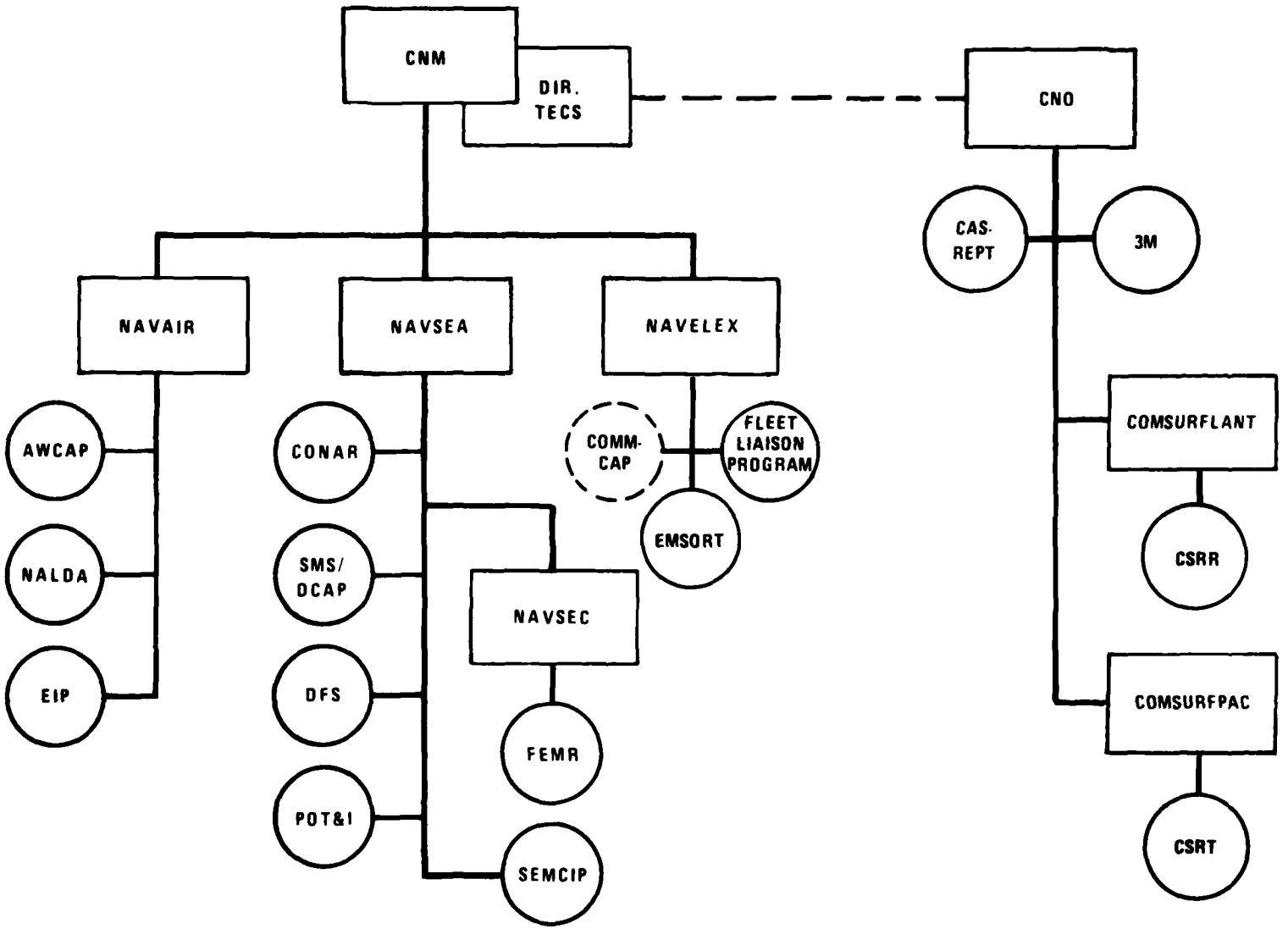

FIGURE 3-1. EME EFFECTS PROBLEM MANAGEMENT PROGRAM RELATIONSHIPS

e. Provide life-cycle coordination (Integrated Logistics Support) to assure EME effects incorporation during conceptual, prototype, production and deployment phases.

f. Provide EME effects training criteria to acquisition and to in-service managers in support of CNO requirements.

g. Perform executive review of in-service support programming and funding to ensure EME corerage.

h. Coordinate EME responsibilities, as the CNM Executive Agent, with the Marine Corps, other DoD activities and foreign organizations.

3.5.1 ADCNM for Reliability and Engineering (MAT-08E)

a. Serve as executive coordinator for the CNM in all in-service EME effects matters.

b. Ensure compliance with this plan and implementation milestones, section 3.6.5.

3.6 Implementation

3.6.1 Funding/Resources Control

The CNM must establish budget line items for in-service EME effects problem support (i.e., identification of funding requirements for the EME effects program management, executive data base and problem definition support.) No budget coverage will be included for the technical solution, implementation and/or corrective action installation. SYSCOMs will provide the necessary planning and funding for platforms and systems under their cognizance, to provide these latter functions. SYSCOM programming of resources to solve and install corrective solutions will be subject to quarterly review by CNM Director TECS.

3.6.2 Director, Tactical Electromagnetic Coordination and Support (TECS) Will:

a. Modify, in collaboration with sponsors and SYSCOM representatives, in-service EME problem correction programs as follows:

Identification - POT&I, CSRR, CSRT, 3-M and EMSORT

Reporting - CASREPT, CONAR

Problem management - DART, DFS, NALDA, EIP, AWCAP, SMS/DCAP and NAVELEX Fleet Liaison Program

b. Recommend and develop for the CNM a centralized executive data base for advising, monitoring and coordinating the programs employed in in-service EME effects problem management.

c. Establish coordinative controls for programming, funding and resources management of in-service EME effects problem management, in collaboration with sponsors and SYSCOMs.

d. Support EME line item programming and budgeting efforts at the CNM level.

e. As CNM EME agent, prepare a CNM EME policy directive and ensure EME effects addressal where elsewhere appropriate..

f. Develop an in-service EME effects problem management manual.

g. Serve as expert interface with the office of the Chief of Naval Operations for in-service EME problem correction.

h. In coordination with the cognizant SYSCOMs and the Chief of Naval Education and Training, develop training plans for treatment of in-service EME effects problems.

i. Provide for inclusion of EME effects problem management in the ILS program (e.g., as an element of NAVMATINST 4000.20B), in consonance with the concepts of annex B.

j. Serve as CNM agent, focal point and expert/advisor for all EME effects matters.

3.6.3 COMNAVAIR, COMNAVSEA and COMNAVELEX Will:

a. Collaborate with the Director, TECS, in EME effects problem management as set forth in subparagraph 3.6.2 and identify (in priority order) funding and resources support.

b. Ensure solution and correction of in-service EME effects problems on a continuing basis.

c. Program and budget resources support for cognizant efforts in EME effects problem management and correction.

d. Adapt the AWCAP (NAVAIR) and the SMS/DCAP (NAVSEA) to accommodate the management of EME effects deficiencies correction and complete development of the COMMCAP (NAVELEX) for EME effects problem management.

e. Develop, and manage training programs to ensure qualified personnel are available for addressing in-service EME effects problems.

f. Include EME effects in all ILS program plans for systems, equipments and platforms.

g. Provide necessary planning, budgeting and resources to support EME effects problem solution, correction, implementation and installation (based on priorities established and approved by the Commanders, SYSCOMs).

h. Provide quarterly status reviews to CNM of accomplishments/requirements on EME effects problems, solutions and corrective actions.

3.6.4 Program Managers Will:

a. In development of systems and equipment, provide for accomodation and utilization of feed-back from in-service EME effects deficiency correction; through ILS planning and management, and including test and evaluation, training, and configuration management.

b. Ensure in-service EME effects corrective actions are reflected in follow-on acquisitions of like or comparable systems and equipments. Provide funding as applicable.

3.6.5 Implementation Schedules

The schedules presented herein, figure 3-2, represent a realistic approach to accomplishing the tasks required to establish a Navy EME effects problems correction program.

ACTIONS REQUIRED BY CNM	FY 78	FY 79	FY 80	FY 81	FY 82
ESTABLISH MANAGEMENT CONTROLS FOR EME PLANNING AND BUDGETARY MATTERS (3.5.c)*	DEVELOP	REVIEW / ISSUE	MONITOR		
DEFINITION OF TECHNICAL/ MANAGEMENT INSTRUCTIONS (3.5.d)	DEVELOP	REVIEW / ISSUE		REVIEW	
PROVISION OF LIFE CYCLE COORDINATION (INTEGRATED LOGISTICS SUPPORT) (3.5.e)		INCORPORATE IN NAVMATINST 4000.20C			REVIEW
PROVIDE EME EFFECTS TRAINING CRITERIA (3.5.f)		DEVELOP & ISSUE			
REVIEW IN-SERVICE EME RESOURCES PROGRAMMING (3.5.g)			QUARTERLY	QUARTERLY	QUARTERLY (CONTINUING)

ACTIONS REQUIRED BY ADCNM RELIABILITY & ENGINEERING (MAT - 08E)					
SERVE AS EXECUTIVE COORDINATOR FOR THE CNM (3.5.1.a)	CONTINUING				
ENSURE COMPLIANCE WITH THIS PLAN (3.5.1.b)	CONTINUING				

*DENOTES SUBPARAGRAPH IN TEXT DIRECTING THE ACTION INDICATED.

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FIGURE 3-2. IN-SERVICE EME EFFECTS PROGRAMS IMPLEMENTATION SCHEDULE

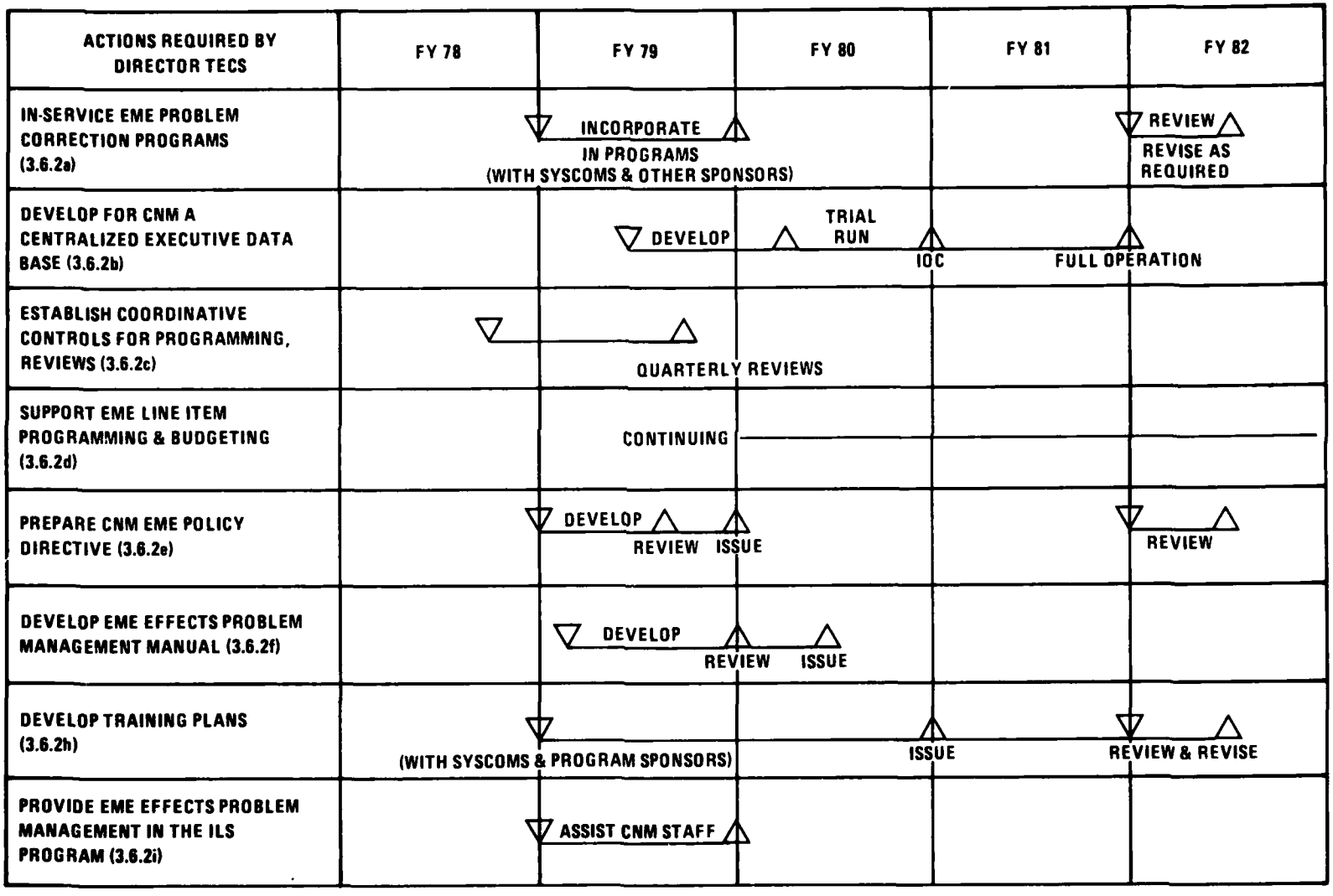

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FIGURE 3-2. IN-SERVICE EME EFFECTS PROGRAMS IMPLEMENTATION SCHEDULE

ACTIONS REQUIRED BY NAVAIR, NAVSEA, NAVELEX	FY 78	FY 79	FY 80	FY 81	FY 82
COLLABORATE WITH THE DIRECTOR, TECS, IN INCLUSION OF EME EFFECTS IN CORRECTIVE PROGRAMS (3.6.3a)		▽		△	REVIEW
PROGRAM AND BUDGET RESOURCE SUPPORT FOR EME EFFECTS PROBLEM MANAGEMENT AND CORRECTION (3.6.3b)		CONTINUING			
DEVELOP TRAINING PROGRAMS FOR IN-SERVICE EME EFFECTS PROBLEMS (3.6.3e)		▽		△ ▽	△ REVIEW
INCLUDE EME EFFECTS IN ALL ILS PROGRAM PLANS (3.6.3f)		▽	△		
ADAPT AWCAP (NAVAIR) & SMS/DCAP (NAVSEA) TO INCLUDE EME PROBLEM MANAGEMENT (3.6.3d)		▽ MODIFY	△ IOC TRIAL RUNS	△ ADJUST	△ FULL OPERATION
DEVELOP COMMPAC FOR EME PROBLEM MANAGEMENT (NAVELEX) (3.6.3d)		▽ DEVELOP △	TRIAL RUNS △	ADJUST △ FULL OPERATION	

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FIGURE 3-2. IN-SERVICE EME EFFECTS PROGRAMS IMPLEMENTATION SCHEDULE

ANNEX A

CHARACTERISTICS OF ON-GOING PROGRAMS

ANNEX A

CHARACTERISTICS OF ON-GOING PROGRAMS

PROGRAM TITLE	Airborne Weapons Corrective Action Program (AWCAP)	Casualty Report (CASREPT)	Combat Systems Readiness Review (CSRR) Program	Combat Systems Readiness Test (CSRT) Program
PURPOSE	A semi-automated system for quick response to corrective action requirements for airborne weapons systems.	The primary means of reporting the real-time material readiness status of a reporting unit with a diminished combat readiness posture.	To evaluate and improve combat systems readiness of ships prior to deployment and at other times as might be required.	To ascertain the material readings of the combat system and to demonstrate the ability of ship's crew to test and maintain elements of the system.
DESCRIPTION	Various reporting channels informing of deficiencies or problems are screened and disseminated for corrective action. Data is maintained in computer based system.	A message report delineating significant casualties affecting equipments essential for performance of designated missions and tasks.	Assist ships in determining operability of combat systems, determining validity of soft-ware support, rectification of problems, and to provide on-the-job training.	Tests derived from PMS are conducted by the ship's crew, with test being run on a preplanned time schedule.
APPLICABLE AREAS	Designated Airborne Weapons Systems.	All ships, craft, and shore activities.	IFF, EW, Communications/Crypto, Air Tracking, and Sonar.	IFF, EW, certain Communications/ Crypto, Air Tracking and Sonar.
CONTROLLING DIRECTIVE	Airtask A4104104/250-4/1A of 17 August 1979	NWIP 10-1, Article 410	COMCRUDESLANTNOTE 9030 of 28 March 1974	COMNAVSURFPACINST 4700.1
COGNIZANT AGENCY	Naval Air Systems Command	Chief of Naval Operations	COMNAVSURFLANT	COMNAVSURFPAC
TECHNICAL ELEMENT	Fleet Weapons Directorate Pacific Missile Test Center Point Mugu, California.	Systems Commands	NAVSEACENLANT, MOTU, NAVSEC, and NAVELEXENGCOM.	NWSES, NAVSEACENPAC, NAVELEXSYSENGCEN, NAVSEEAPAC, ASIR, and MOTU.
ADMINISTRATION	Systems Analysis Branch, PMTC Code 2243	Naval Material Command	Naval Ship Weapons Systems Engineering Station, Port Hueneme, Ca.	Naval Ship Weapons Systems Engineering Station, Port Hueneme, Ca.
REPORTING SYSTEM	Reports from EIP, QDR program, Safety Reporting Program, ALREPs, ILSMT, and IWSR are processed by PMTC Fleet Liaison Office.	Message from Commanding Officer, with follow up Situation Report (SITREP) and Casualty Cancellation (CASCANS).	Post review critique with ship, report to ship from tech element, and message from ship to COMNAVSURFLANT.	Critique with ship, a report to the ship, and a summary message from ship to COMNAVSURFPAC.
SIMILAR PROGRAMS	Surface Missile System/Deficiency Corrective Action Program (SMS/DCAP).	NONE	Combat Systems Readiness Test (CSRT) Program.	Combat Systems Readiness Review (CSRR) Program.
SUPPORTING PROGRAMS	Engineering Investigation Program, Quality Deficiency Reporting, ALREPs, [illegible], and ILSMT reviews.	Detection, Action, and Response Technique (DART); Direct Fleet Support (DFS).	PMS, SECAS, and Weapons Systems Review.	PMS, SECAS, and Weapons Systems Review.
SUB PROGRAMS	AWCAP Management Information Reporting System (MIRS).	CASREPT Automatic Data Processing Data Bank.	NONE	NONE
DATA BANK	MARS is a computer based data system.	CASREPT ADP, FMSO, Mechanicsburg.	NONE	NONE
EMC INCLUSION	NO	NO	NO	NO
LOCATION	Navy-wide support [illegible] PMTC, Pt. Mugu	Navy-wide	In-Port, aboard ship	At-sea, aboard ship
FREQUENCY	As occurring, plus periodic summary reports.	As required	Prior to deployment and as necessary.	
TYPE OF PROGRAM	CORRECTIVE ( ) MANAGEMENT (X) OTHER ( )	CORRECTIVE ( ) MANAGEMENT ( ) OTHER (X)	CORRECTIVE (X) MANAGEMENT (X) OTHER ( )	CORRECTIVE (X) MANAGEMENT (X) OTHER ( )
REMARKS				

PROGRAM TITLE	Commanding Officer's Narrative Reports (CONARs)	Detection, Action, and Response Technique (DART)	NAVSEASYSCOM Direct Fleet Support (DFS) Program	Combat Systems Pre-Overhaul Test and Inspection (POT&I)
PURPOSE	To provide a commanding officer with a reporting program for commenting and recommending relative to shipboard systems.	To identify and correct the most serious shipboard problems affecting Fleet overall readiness.	To provide support to Fleet units in correction of operation and maintenance problems beyond the capability of ship's force.	To determine the material condition and to evaluate the level of repairs required prior to a ship's overhaul.
DESCRIPTION	A letter format reporting system discussing all aspects of combat supporting systems, including recommendations and requests for assistance.	Specified systems are placed on the DART list to provide intensified concentration on the alleviation of problem areas.	It provides advice, instruction, training, emergency and periodic reviews, and tests and inspections to evaluate and ensure effectiveness of equipments and systems.	A standardized set of test methods for all shipboard systems, which contribute to the comprehensive repair recommendations.
APPLICABLE AREAS	ASW, Combat Direction, Guided Missiles, Gun, Search Radar, Tactical Data, LAMPS, IC, EW, IFF, Comm.	All shipboard equipment and systems regardless of class cognizance. (See remarks)	All shipboard systems and equipments.	All shipboard systems and equipments.
CONTROLLING DIRECTIVE	NAVSEAINST 8000.1	NAVSEAINST 4790.28	NAVSEAINST PRESENTLY IN FINAL REVIEW.	NAVSEA 0967-LP-6..1-6010, Volume 1, issued 18 July 1977.
COGNIZANT AGENCY	NAVSEA Surface Warfare Systems Group (SEA-06G)	Deputy Commander, Fleet Support Directorate (SEA 04)	NAVSEA Fleet Support and Improvement Program Division (SEA 049)	NAVSEA
TECHNICAL ELEMENT	Naval Surface Weapons Systems Engineering Station, Port Hueneme, California (NWSES)	Director, Fleet Improvement Programs Division (SEA 049)	Naval Engineering Technical Services (NETS), Mobile Technical Units (MOTUS), and Contract Engineering and Technical Services (CETS).	Planning and Engineering for Repairs and Alterations Activity (PERA)
ADMINISTRATION	NAVSEA	NAVSEA Fleet Improvement Programs Division (SEA 049)	NAVSEA Fleet Support and Improvement Division (SEA 049)	TYCOM and Ship Logistic Director
REPORTING SYSTEM	Letter format to NSWSES	DART Equipment Manager (DEM) is assigned by SYSCOM to establish management controls as necessary.		POT&I Test/Inspection Requirement Sheets.
SIMILAR PROGRAMS	NONE		NAVELEX Fleet Liaison Program	
SUPPORTING PROGRAMS	3-M, CASREPTs	CASREPT ADP and Maintenance Data System	NETS and CETS	
SUB PROGRAMS	NONE	Individual systems, i.e., AN/SPS-40 series radars, AN/WLR-1, etc.		
DATA BANK	NONE			
EMC INCLUSION	NO	NO	NO	NO
LOCATION	N/A	N/A	N/A	Aboard ship, dockside and underway
FREQUENCY	Quarterly	N/A	As required	Prior to overhaul
TYPE OF PROGRAM	CORRECTIVE ( ) MANAGEMENT (X) OTHER ( )	CORRECTIVE ( ) MANAGEMENT (X) OTHER ( )	CORRECTIVE (X) MANAGEMENT ( ) OTHER ( )	CORRECTIVE ( ) MANAGEMENT ( ) OTHER (X)
REMARKS		Cognizant SYSCOM Commanders and Project Managers are responsible for nominating systems/equipment to be placed on the DART list.		

PROGRAM TITLE	Fleet Electromagnetic Readiness Program (FEMR)	Ship's Maintenance and Material Management (3-M) System	Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP)	Surface Missile System/Deficiency Corrective Action Program (SMS/DCAP)
PURPOSE	To provide EM participation in the Board of Inspections and Surveys (INSURV) program.	To provide for managing maintenance and maintenance support to ensure maximum equipment operational readiness.	To provide a cohesive, organized effort to effect solutions to existing and potential Fleet EME problems.	A semi-automated problem management system for in-service engineering and logistic support of designated weapons support systems.
DESCRIPTION	Teams conduct complete examination of ship's electronic equipment, and include all facets of EME effects.	A program to plan, schedule, report, and correct all aspects of all Navy equipment and systems material maintenance and readiness.	SEMCIP is comprised of seven subprograms which are structured to provide comprehensive EME problem solution and prevention.	Various reporting systems are processed by computer and fixes are recommended. Status reports are continued until correction is available to the Fleet.
APPLICABLE AREAS	All shipboard electromagnetic systems.	All ships, service craft, small boats, non-aviation fleet support equipment and shore equipment.	All shipboard RF systems	Deficiency problem information to 276 U.S. Navy ships, and to SMS equipped ships of eight allied nations.
CONTROLLING DIRECTIVE		OPNAVINST 4790.-	NAVSEAINST 2410.2 (General Guidance Only)	
COGNIZANT AGENCY	NAVSEC Combat Systems Design Integration Division	Chief of Naval Operations	NAVSEA Tactical Electromagnetic Program Office (SEA 96T)	NAVAL Ship Weapon System Engineering Station, Port Hueneme, Ca.
TECHNICAL ELEMENT	NAVSEC Combat Systems Design and Integration Division, Electromagnetic Performance Compatibility.	See written brief in Appendix A to Annex A.	NAVSEA, SYSCOMS, Navy field activities, and contractors, and equipment managers.	Systems Effectiveness and Assurance Department, NWSES Code 32[illegible]
ADMINISTRATION	NAVSEC	See written brief in Appendix A to Annex A.	NAVSEA (SEA 96T)	Systems Effectiveness and Assurance Department, NWSES Code 32[illegible]
REPORTING SYSTEMS	Reports to NAVELEX TEMP office, NAVSEC SEMCIP, FEMR data bank, and equipment managers.	Various reports and forms as applicable	Reports to various agencies as required, and the SEMCIP data bank.	ASREPS, CNAVARS, NSAT SAT reports, OPNAV 4790.2K reports and direct message and letter reports
SIMILAR PROGRAMS	NONE	NONE	NONE	Airborne Weapons [illegible] Action Program (AWSDAP)
SUPPORTING PROGRAMS	SEMCIP	Various	FEMR	ASREPS, NSAT SAT
SUB PROGRAMS	NONE	Planned Maintenance System (PMS) Maintenance Data System (MDS) Inactive Equipment Maintenance (IEM)	Quick Response Capability (QRC), Ship Class Evaluation, Radiation Safety, Analytical Techniques*	NONE
DATA BANK	FEMR data bank is held at contractor's office	MDS Data Bank, MSOD, Mechanicsburg	SEMCIP reports file of meetings	SMS DCAP
EMC INCLUSION	YES	NO	YES	NO
LOCATION	Aboard designated ships	Navy-wide	Aboard ship	Navy-wide support from NWSES
FREQUENCY	As requested by INSURV	Various as required	As required	As required
TYPE OF PROGRAM	CORRECTIVE ( ) MANAGEMENT( ) OTHER (X)	CORRECTIVE ( ) MANAGEMENT( ) OTHER (X)	CORRECTIVE (X) MANAGEMENT(X) OTHER ( )	CORRECTIVE (X) MANAGEMENT(X) OTHER ( )
REMARKS	*Separate management from SEMCIP, and cross-feed within the two programs come from shared field technicians.		*EME Hardware Fixes, EMC Specifications and Standards, and EMC Training and Intra-Fleet Communication sub program. Also see comments in FEMR description.	

PROGRAM TITLE	INTERCEPT	Naval Aviation Logistics Data Analysis (NALDA) System	Engineering Investigation Program (EIP)
PURPOSE	It establishes monitoring techniques and responsibilities and provides feed-back on remedial actions taken.	Provides an integrated central data storage and retrieval and central processing for NAVAIR logistics community.	Provides an investigation to determine scope and depth of fleet equipment-material deficiencies.
DESCRIPTION	Various indicators are used to establish data on mean time between corrective maintenance actions, mean time to repair, mean down time, availability, number of safety maintenance.*	Integrates Aviation 3M data, NARF maintenance data, Technical Directive Status Accounting data and Safety Center data to provide aviation maintenance and logistic support analyses.	Causes initiation of action to investigate reports of deficiencies or unsatisfactory conditions in aviation-associated equipment and materials through maintenance engineering cognizant field activities.
APPLICABLE AREAS	All areas covered by 3-M.	Aviation maintenance, at present, of selected aircraft. To be expanded to include ground support equipment and engine management; and additional aircraft systems.	All service aircraft and weapons systems and their included subsystems, equipments, components, related ground support equipment and special tools and materials.
CONTROLLING DIRECTIVE	NAVMATINST 4790.24		NAVAIRINST 4730.5A
COGNIZANT AGENCY	SYSCOM	NAVAIRSYSCOM	NAVAIRSYSCOM
TECHNICAL ELEMENT	Fleet Material Support Department, Mechanicsburg, Pa.	Harry Diamond Laboratory	Maintenance engineering cognizant field activities of NAVAIR
ADMINISTRATION	SYSCOM	AIR-401E	NAVAIR 411
REPORTING SYSTEM	Maintenance Data Collection System (3-M)	Maintenance Data Collection System (3-M), other aviation maintenance discrepancy reports.	Unsatisfactory Material/Condition Report (UR) System
SIMILAR PROGRAMS	DART	NONE	Direct Fleet Support (in NAVSEA)
SUPPORTING PROGRAMS	3-M	3-M	UR
SUB PROGRAMS	NONE	NONE	NONE
DATA BANK	MDCS	Harry Diamond Laboratory	NONE
EMC INCLUSION	NO	NO	NO
LOCATION	N/A	Data Bank to user terminals	No central point
FREQUENCY	N/A	N/A	As occurring
TYPE OF PROGRAM	CORRECTIVE ( ) MANAGEMENT (X) OTHER ( )	CORRECTIVE ( ) MANAGEMENT ( ) OTHER (X)	CORRECTIVE ( ) MANAGEMENT (X) OTHER ( )
REMARKS	*(cont'd) items, repair parts not in stock and repair parts not carried.	Management or Corrective Action not integral part of program.	

PROGRAM TITLE	Electromagnetic Systems Operational Readiness Testing (EMSORT) System	NAVELEXSYSCOM Fleet Liaison Program
PURPOSE	Determine whether submarine ESM systems are operating according to specifications, and quantifies performance.	Ensures rapid response to fleet requests for assistance in correcting problems in electronic systems and equipments.
DESCRIPTION	Mobile transmitter and antenna establishes a precise EM field for submarine antennas, enabling analysis of reception.	Causes prompt action to investigate, and coordinate corrective action for fleet electronic equipment problems.
APPLICABLE AREAS	Operational antennas/receiving units of ships and submarines.	NAVELEX-cognizant electronic systems and equipment.
CONTROLLING DIRECTIVE	NONE	NAVELEXSYSCOM Fleet Support Manual of 3 January 1978.
COGNIZANT AGENCY	NAVELEXSYSCOM	NAVELEXSYSCOM (ELEX-04)
TECHNICAL ELEMENT	Naval Underwater Systems Center, New London.	NAVELEX Fleet Liaison Officer Portsmouth, Charleston, San Diego and Vallejo.
ADMINISTRATION	PME-107	ELEX-04
REPORTING SYSTEM	NONE	In accordance with Fleet directives
SIMILAR PROGRAMS	NONE	NAVSEA Direct Fleet Support Program.
SUPPORTING PROGRAMS	NONE	Various (see appendix XVII to annex B).
SUB PROGRAMS	N/A	NONE
DATA BANK	NONE	NONE
EMC INCLUSION	NONE	NONE
LOCATION	Mobile van at Norfolk, Virginia.	NAVELEXSYSENGCENs Portsmouth, San Diego, Charleston, and Vallejo.
FREQUENCY	N/A	As required.
TYPE OF PROGRAM	CORRECTIVE ( ) MANAGEMENT ( ) OTHER (X)	CORRECTIVE (X) MANAGEMENT ( ) OTHER ( )
REMARKS	Not yet an established system on a regularized basis.	

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ANNEX B

SUMMARY OF PROGRAMS AND PROCEDURES AMENABLE FOR USE IN IDENTIFYING, REPORTING, MANAGING AND CORRECTING EME EFFECTS DISCREPANCIES

ANNEX B

SUMMARY OF PROGRAMS AND PROCEDURES AMENABLE FOR USE IN IDENTIFYING, REPORTING, MANAGING AND CORRECTING EME EFFECTS DISCREPANCIES

As the result of a review of Navy material deficiency and problem reporting and correction programs, certain programs have been identified as being candidates for EME effects deficiency management. The programs so identified are summarized in the appendices to this annex as follows:

Deficiency Identification

- Combat Systems Pre-Overhaul Test and Inspection - Appendix I
- Fleet Electromagnetic Readiness Program - Appendix II
- Combat Systems Readiness Review - Appendix III
- Combat Systems Readiness Test - Appendix IV
- Ship's Maintenance and Material Management System - Appendix V
- Electromagnetic Systems Operational Readiness Testing (EMSORT) System - Appendix XVI

Reporting

- Casualty Report - Appendix VI
- Commanding Officer's Narrative Report - Appendix VII

Corrective Action Management

- Shipboard Electromagnetic Compatibility Improvement Program - Appendix VIII
- Detection, Action and Response Technique - Appendix IX
- Direct Fleet Support Program - Appendix X
- Naval Air Logistic Data Analysis (NALDA) Program - Appendix XI
- Engineering Investigation Program (EIP) - Appendix XII
- Project INTERCEPT - Appendix XIII
- Surface Missile System/Deficiency Corrective Action Program - Appendix XIV
- Airborne Weapons Corrective Action Program - Appendix XV
- NAVELEXSYSCOM Fleet Liaison Program - Appendix XVII

APPENDIX I

COMBAT SYSTEMS PRE-OVERHAUL TEST AND INSPECTION

The POT&I program was established by COMNAVSEA within the overall combat systems test and certification program for surface ships. Its purpose is to provide standards to those activities participating in the development and authorization of total ship overhaul work packages. It establishes specifications and standardizes scope and methodology for overhaul packages. The results of the POT&I provide comprehensive repair recommendations.

The stated objectives of the POT&I are to determine the material condition and evaluate the level of effort required to effect needed repairs; coordinate and minimize test efforts imposed on ships prior to overhaul; and ensure that existing standards are used.

There are two testing periods for each ship, dockside and underway, the latter encompassing only those tests/inspection which can not be accomplished in port. POT&I documentation includes POT&I Plan, developed by the Planning and Engineering for Repairs and Alterations Activity (PERA) or planning agent tasked by him; a Ship System Configuration Index; a POT&I Test Agenda; Standard Test Procedures, as part of the POT&I Plan; and Test/Inspection Requirement Sheets.

Various activities are tasked with separate and interlocking responsibilities as participants in the POT&I program. The Ship Logistic Director (SLD) is responsible to ensure that standard POT&I requirements are developed. The surface ship type commander (TYCOM) is responsible for scheduling ship availability for ensuring a purged CSMP is available for planning, for reviewing the POT&I report work scope and assignment, and for coordinating all tests performed by the participating activities. PERA is responsible, as tasked by the TYCOM, for managing, coordinating and scheduling the POT&I program to develop the repair work package. The shipyard or assigned planning agent is responsible for conducting assigned portions of the POT&I, for ensuring the deficiencies and recommended work items are

identified and substantiated and for issuing the POT&I Report. The ship's force, under its commanding officer, is responsible for providing a POT&I Coordinator, assuring that known deficiencies are identified in the CSMP, purging redundant deficiencies, conducting assigned tests during the POT&I, documenting ship's force discrepancies on OPNAV 4790/2K forms, reviewing the shipyard-originated portion of the POT&I to ensure that required systems/equipment will be ready for tests, submitting all uncorrected discrepancies from prior inspections, assisting the inspecting activity by operating equipments and identifying deficiencies and providing to the shipyard up-to-date status of corrected POT&I deficiencies or new work items identified.

Requirements and guidance for the POT&I program are set forth in the Combat System Test and Certification Manual for Surface Ships, NAVSEA 0967-LP-611-6010, Volume I, issued 18 July 1977.

APPENDIX II

FLEET ELECTROMAGNETIC READINESS (FEMR) PROGRAM

This program is operated within the Combat Systems Design and Integration Division of the Naval Ship Engineering Center, in the Electromagnetic Performance/Compatibility Section. FEMR functions as an inspection program, as an integral part of the Board of Inspections and Survey (INSURV) procedures.

Originated in 1972 as part of the combatant systems design assessment, it has served as an adjunct to the INSURV since 1975. Teams, consisting of one government and two contractor engineers, conduct a complete examination of ship's electronic equipment, and include all facets of EME effects. Prior to inspections, a contractor-held data bank is queried for potential problems in the ship class. A formal questionnaire format is used, and reports are made through the INSURV reporting procedure. In addition, the NAVSEA TEMP Office (SEA-06T) is provided with inspection results for use in the Shipboard Electromagnetic Improvement Program (SEMCIP); key systems design offices in NAVSEA and NAVSEC are informed; and the information obtained in each inspection is also placed in the FEMR data bank.

APPENDIX III

COMBAT SYSTEMS READINESS REVIEW (CSRR) PROGRAM

The CSRR, in the Atlantic Fleet, was developed to evaluate and improve combat systems readiness of ships prior to deployment and at other times as might be required. It expands the weapons system review (WSR) and at the same time combines the various individual assist and technical support visits, necessary for a ship before deploying, into a dedicated 2-week period. The stated objectives of the CSRR are to assist the ships in determining the operability of its combat systems, in determining the validity of software support for on-board systesm, in rectifying problem areas and to provide on-the-job training.

The team organization is comprised of about 40 technicians from NAVSEACEN-LANT, MOTU, NAVSEC and NAVELEXENGCOM. An officer-in-charge is usually assigned from the squadron or from NAVSEACENLANT and is responsible for the overall review completion and the final message report. A team leader, under the O-in-C, is responsible for the technical coordination and administration. A logistics expediter provides assistance in obtaining spare parts required in the course of the review. Group leaders, under the team leader, supervise the review of related systems.

CSRR test plans are prepared by the Naval Ship Weapons Systems Engineering Station (NWSES), Port Hueneme, California. Hardware tests are selected from PMS tests, and their listing comprises the bulk of the plan. The software portion of this consists of sight inventories, a SECAS update, and a determination of field change status. The review itself is conducted by the ship's force, with the CSRR team observing and assisting. Outstanding discrepancies are corrected by follow-on technical assistance. Significant findings are discussed at a post-review critique; a detailed report is provided to the commanding officer of the ship under review; and a message summary report of major findings is made by the officer-in-charge to COMNAVSURFLANT.

The CSRR, in the Atlantic Fleet, is paralleled by a Combat Systems Readiness Test (CSRT) program in the Pacific Fleet. Tests are essentially the same. However, the CSRR is accomplished in-port, while the CSRT requires an at-sea period. Guidance for the CSRR is set forth in COMCRUDESLANTNOTE 9030 of 28 March 1974.

APPENDIX IV

COMBAT SYSTEM READINESS TEST (CSRT) PROGRAM

The CSRT, in the Pacific Fleet, was developed to evaluate ship's combat systems readiness. It has a twofold objective of ascertaining the material readiness of the combat system and demonstrating the ability of ship's personnel to maintain and test various elements of the system.

The team "observing" the CSRT is comprised of members from Naval Ship Weapon Systems Engineering Station (NWSES), NAVSEACENPAC, NAVELEX-SYSENGCEN, NAVSEEAPAC, ASIR and MOTU. The organization of the team provides for an officer-in-charge, in overall charge; a technical coordinator, who schedules and coordinates the test team efforts and monitors collected data; team leaders who are responsible for the conduct of the CSRT in their respective system areas; and engineer/technicians who monitor all tests, provide technical guidance and make recommendations on problem areas.

The plan for the CSRT is prepared by NWSES. The tests included therein are derived from PMS system and equipment level tests for hardware, and from technical manuals as applicable. Tests are conducted by the ship's crew, with each test being run on a preplanned time schedule. The failure of a particular test does not necessarily result in failing CSRT. Overall evaluation of the readiness of the ship is the criterion on which the final decision is based, by CSRT team members and final assessment by the team O-in-C.

A portion of the CSRT is conducted underway, in contrast with the CSRR of the Atlantic Fleet which is held entirely in port. Underway requirements include testing of the IFF, EW, certain communications/crypto capabilities, air tracking and sonar.

A comprehensive critique is conducted on completion of the CSRT and chaired by the ISIC of the ship. A detailed report is provided to the ship prior to the

critique, and a summary message report sent to COMNAVSURFPAC and the ship's group commander. CRST is governed by the provisions of COMNAVSURFPACINST 4700.1.

APPENDIX V

SHIPS' MAINTENANCE AND MATERIAL MANAGEMENT (3-M) SYSTEMS

The 3-M Systems are comprehensive integrated maintenance management systems operating under the sponsorship and policy guidance of the CNO. The primary objective is to provide for managing maintenance and maintenance support to ensure maximum equipment operational readiness. 3-M is applicable to all ships, service craft, small boats, non-aviation fleet support equipment and equipment used ashore which is identical to shipboard equipment. Medical equipment, fleet ballistic missile weapons systems, nuclear power plants and associated test equipment are not included.

Technical direction of the 3-M Systems is by the Chief of Naval Material, who is responsible for providing instructions, identifying resources, supervising the efforts of the Maintenance Support Office Department (MSOD), Mechanicsburg, Pennsylvania, and for managing the 3-M Systems in the Naval Material Command. The MSOD serves as the Maintenance Data System central data bank, developing and installing computer programs for 3-M data, augmenting 3-M data from other Navy and DOD data files and for producing data products for use in maintenance management and support.

Navy Manpower and Material Analysis Centers (NAVMMAC), Atlantic and Pacific, in Norfolk and San Diego respectively, are responsible for 3-M Systems training, technical assistance to the Fleet in 3-M and other ADP matters, central programming coordination for Fleet 3-M programs, and assistance in Preventive Maintenance System (PMS) verification and installation in new construction and major conversion ships.

SYSCOMs are responsible for ensuring that PMS packages are procured and delivered simultaneously with equipment, for ensuring that Maintenance Data System (MDS) data is used to identify deficiencies and measure applicable equip-

ment parameters and for taking action on PMS Feedback Reports. Naval Sea Support Centers (NAVSEACENs), Atlantic and Pacific, in Norfolk and San Diego, respectively, maintain PMS libraries of software and documentation, perform feedback screening, develop documentation and maintain documentation inventories.

The Type Commanders have primary responsibility for effective operation of Ships' 3-M Systems; with ships' commanding officers having overall responsibility for the organization and effectiveness of ships' maintenance in accordance with the 3-M Systems.

The 3-M Systems are the Planned Maintenance System (PMS), the Maintenance Data System (MDS), and the Inactive Equipment Maintenance (IEM) System. PMS provides its users with a relatively simple and standard means for planning, scheduling, controlling and performance planned maintenance. The actions encompassed are considered to be the minimum required to maintain equipment in a fully operable condition and provides for parts replacement prior to failure. Documentation is provided for all equipments in the form of Maintenance Requirement Cards, setting forth detailed procedures for maintenance, and Maintenance Index Pages (MIPs), which provide a brief description of maintenance for each equipment item and are used in consolidated lists of equipment maintenance. The PMS Feedback Report (FBR) is the means for reporting discrepancies and problems and for requesting PMS software.

The MDS provides for the reporting of corrective maintenance actions and related matters. It is a basic premise of the MDS that data will be reported only once by the fleet personnel, and thereafter information will be provided by the MDS data bank. Numerous reports are already programmed by MSOD, and include maintainability and reliability, man-hour usage, alterations status, material usage and costs and fleet material conditions. Specific reports available, of interest to this plan, are the Electronic Equipment Performance Report (MSOD 4790.S6242) and the Electronic Problem Equipment Report (MSOD 4790.S6243).

The third subsystem of 3-M is the Inactive Equipment Maintenance (IEM) System which provides PMS procedures modified and reduced for maintenance of systems and equipments during overhauls, availabilities and other extended periods during which equipment is not operated.

The 3-M Systems are governed by OPNAVINST 4790.4, a three-volume directive which provides comprehensive guidelines.

APPENDIX VI

CASUALTY REPORT (CASREPT)

Casualty reports are message reports, submitted by commanding officers of ships, craft and shore activities, delineating significant casualties affecting equipments essential for performance of designated missions and tasks. The Casualty Report System, established by the Chief of Naval Operations and governed by the guidance of Article 410,NWIP 10-1, is the primary means of reporting the real-time material readiness status of reporting unit having a diminished combat readiness posture.

CASREPTS, report symbol OPNAV 3040-1, are interpreted as including follow-up Situation Reports (SITREPS), amplifying messages and Casualty Correction Reports (CASCORS), or Casualty Cancellations (CASCANS) subsequent to a casualty. Their scope is broad, including reports of disaster or accidents involving loss of capability, material damage or personal injury resulting from collisions, strandings, fires at sea, and damage from natural calamities. Within the Naval Material Command, treatment of and response to CASREPTS are provided for in NAVMATINST 4000.23 (Subj: Consolidated CASREPT Program within the NMC Including its Application in Conjunction with Detail 3-M Data) and NAVMATINST 3040.2 (Subj: Initial Appraisal and Follow-Up Summary for CNM on Serious Ship Casualties).

Review and analysis of CASREPT data provides a strong indicator of operational, maintenance and supply problems. A CASREPT ADP data bank is maintained by the Fleet Material Support Office (FMSO), Mechanicsburg, Pennsylvania, the CNM designated focal point for the collections of data from casualty reports submitted by all Fleet units. Within each of the Systems Commands, procedures are established for responding to CASREPTS affecting systems and equipment under their respective cognizance, both in the area of immediate correction of material derangements and in the recognition and correction of material derangements and in the recognition and correction of debilitating trends.

In NAVSEA, for example, under NAVSEAINST 4790.2 (Subj: Detection, Action, and Response Technique (DART); procedures and responsibilities for), procedures for reviewing CASREPT data covering the Fleet's most serious shipboard equipment problems are established. Also, NAVSEAINST 3040.1 (Subj: Consolidated Casualty Report (CASREPT) Program) sets forth policy, procedures and responsibilities within that SYSCOM for the orderly processing and subsequent action in response to Fleet Casualty reports. The other SYSCOMs have comparable procedures.

APPENDIX VII

COMMANDING OFFICER'S NARRATIVE REPORTS (CONARs)

The CONAR is a narrative report submitted quarterly by commanding officers of all ships and schools equipped with combat supporting system. Governed by NAVSEAINST 8000.1 and assigned Reporting Symbol 8000-1, the CONAR program is managed and funded by the Surface Warfare Systems Group (SEA-O6G) of NAVSEA and is administered by the Naval Surface Weapons Systems Engineering station (NSWSES), Port Hueneme, California, to whom the reports are submitted by the originators. NWSES is responsible for reproducing and distributing CONARs to cognizant activities within 5 days of receipt. Significant problems are extracted and entered into applicable control media and subsequently acted upon.

CONAR provides a commanding officer with a wide latitude of opportunity for commenting either on a system as a whole or on its components, and to make recommendation for improvement. It is not designed to be relied upon as the primary means of reporting hardware problems, since its frequency is quarterly, hence delays of 90 days or more may result in initiation of remedial action.

The general format prescribed includes a general discussion section comprised of brief description of operations during the inputing report, overall appraisal, adequacy of training, adequacy of manning, spare parts, documentation, technical assistance and recommendations. The second section of the report provides an appraisal of individual work area or components of the combat systems. Systems to be addressed are anti-submarine warfare, combat direction, guided missile, gun, search radar, tactical data, light airborne multi-purpose, internal communications, electronic warfare, identifications friend of foe, communication and navigation.

APPENDIX VIII

SHIPBOARD ELECTROMAGNETIC COMPATIBILITY IMPROVEMENT PROGRAM (SEMCIP)

The SEMCIP program was established in NAVSEA in 1973 to provide a cohesive, organized effort to effect solutions to existing and potential Fleet EME problems. It is managed and directed by the NAVSEA Tactical Electromagnetic Program (TEMP) Office (SEA-06T). Problem solution and correction, whenever possible, is on a ship Class basis and in this way provides baselines for future platform and electronic systems design and procurement incorporating electromagnetic compatibility features. SEMCIP is comprised of seven subprograms which are structured to provide comprehensive EME problem solution and prevention. They are briefly, as follows.

The Quick Response Capability subprogram provides the means to respond promptly to EME effects problems aboard individual ships. After review of ship Class data bank information, an analysis is made and a quick response team formed to go onboard, investigate the cause of the problems, determine a solution and if possible correct it. As in others of the subprograms, selected engineers and specialists are called upon from NAVSEC, Navy laboratories, other Navy field activities and contractors. Findings are entered in the SEMCIP data bank, which serves all the subprograms.

The Ship Class Evaluation subprogram identifies sources of potential EME effects problems in designated Classes of ships, making analytical on-board surveys, and provides recommendations for corrective action or modifications, as necessary. This subprogram reduces test requirements placed on individual ships, and, also, provides technical data for system and platform design.

The Radiation Safety subprogram is designed to detect and eliminate EM radiation hazards to either personnel or material. Through this subprogram, composite electromagnetic fields are determined at specific locations, data is analyzed and qualitative estimates of hazards developed. Here again, data collected can influence later design.

The Analytical Techniques subprogram is comprised of analytical techniques development, a specialized data base, a computer simulation compatibility and advanced scale modeling techniques. The objective is to develop and facilitate the application of new and improved analytical techniques and tools in the detection and analysis of shipboard EME effects problems.

The EME Hardware Fixes subprogram has as its purpose the enablement of design, procurement and dissemination of fast effective solution to Fleet EME effect related problems. Requirements for this subprogram are usually imposed by one or more of the other subprograms. This subprogram concerns itself primarily with design and engineering of fixes, with actual implementation being funded and accomplished by other program managers.

The EMC Specifications and Standards subprogram serves to introduce proven EMC improvement criteria into standards and specifications. The aim of this subprogram is to progressively reduce EME related problems in future procurements and eventually establish EME effects as a major whole ship design requirement.

The EMC Training and Intra-Fleet Communication subprogram is aimed toward promoting an increased Fleet-wide awareness of EMC, its broad implications, and its related requirements. Skills of shipboard personnel are evaluated in the course of the surveys conducted in connection with other subprograms; on-the-job training is conducted; and a Navy-wide EMC Training Plan has been developed and issued. An "EMC Alert" system disseminates information pertaining to specific EMC problems to applicable ships and shore activities.

APPENDIX IX

DETECTION, ACTION, AND RESPONSE TECHNIQUE (DART)

The DART program was established to identify and correct the most serious shipboard problems affecting Fleet overall readiness. It is an intensive management technique, operating under NAVSEA as Program Director for all NAVMAT. It encompasses all shipboard installed equipment and systems regardless of class cognizance, including aviation oriented equipment, but excludes equipment under the responsibility of the Strategic Systems Project Office and the Nuclear Power Directorate, NAVSEA. While providing intensified concentration on specific problem alleviation, it does not replace or supersede normal procedures for providing solutions to Fleet equipment and support problems.

Cognizant SYSCOM Commanders and Project Managers are responsible for nominating systems/equipment to be placed on the DART list, basing their decisions on all available information, including CASREPTS and the Maintenance Data System. The Deputy Commander, Fleet Support Directorate (SEA 04) is the DART Program Director, and as such consolidates nominations for inclusion in the program and forwards them to the CNM for approval. When approved, all cognizant managers and offices are informed. The Director, Fleet Improvement Programs Division (SEA 049), is the DART Program Manager, and ensures that initial analysis and follow-up reviews are conducted and that milestones are established. He coordinates DART funding and logistic support requirements and generally acts as the single point of contact among participants, for the program.

For each system/equipment in the DART program, a DART Equipment Manager (DEM) is assigned by the cognizant SYSCOM Commander. The DEM develops and supervises the execution of the equipment improvement programs, including management plans, initiation of budget submissions, provision of progress reports, and establishing positive management controls.

Examples of equipments now included in the DART program are 1200 PSI boilers, air compressors, STREAM, AN/SPS-40 series radars, AN/WLR-1 and ASROC launchers.

The DART program is governed by NAVSEAINST 4790.2B (Subj: Detection, Action, and Response (DART); procedures and responsibilities for). Reporting symbol 4790-5 assigned.

APPENDIX X

NAVSEASYSCOM DIRECT FLEET SUPPORT (DFS) PROGRAM

The DFS program is designed to provide support to fleet units in the correction of organizational level operation and maintenance problems which are beyond the capability of ship's force and intermediate maintenance activities. It provides advice, instruction and training to ships' forces in specific installed equipments and systems; and provides emergency and periodic reviews, tests and inspections to evaluate and ensure effectiveness and material condition of equipments and systems.

DFS services are provided by Naval Engineering Technical Services (NETS) specialists, Mobile Technical Units (MOTUs) and Contract Engineering and Technical Services (CETS). NETS services are provided by Navy civilian personnel located at the Naval Sea Support Centers and their Fleet Support Offices and the Naval Ship Engineering Center and its Naval Ship Engineering Center Divisions. MOTUs, under the management control of the Fleet Commanders, are manned by naval personnel and augmented by civilian Contract Field Specialists assigned to specific MOTUs on a yearly basis. CETS are on-call and emergency services provided by private contractors.

DFS technicians are available for visits to operational ships for resolving casualties and maintenance problems beyond the capability of ship's and intermediate maintenance activities (IMA) and when necessary, for reviewing ships' logistic support packages. They are also available for functional checks, i.e., specific reviews, tests and inspections, as requested by Fleet Commanders, in specific areas as designated by NAVSEA.

In the employment of DFS services, it is stressed that every attempt should be made first to resolve problems at the operational or IMA level or secondly by MOTU or ship repair facility assistance. Only after these efforts are exhausted

should NAVSEA controlled NETS or CETS assistance be requested. Ships are adjured to have cognizant technicians and applicable tools, test equipment and publications available so that nonproductive time for assisting technicians is kept to a minimum. The presence of ships' technicians serves the twofold purpose of assisting in more directly identifying the problem and also in providing on-the-job training for ship's personnel. DFS services are available worldwide for deployed units. However, logistic support commanders are expected to arrange and expedite transportation for technicians.

The DFS program is directed and controlled by the NAVSEA Fleet Support and Improvement Program Division (SEA049). A NAVSEA Instruction which comprehensively addresses the program is in the final stages of review prior to issuance.

APPENDIX XI

NAVAL AVIATION LOGISTICS DATA ANALYSIS (NALDA) SYSTEM

The NALDA System provides an integrated nonduplicative central data base, storage and retrieval capability and central processing for managers, engineers and analysts in the NAVAIR logistics community. Primary users are the NAVAIR-SYSCOM headquarters; Naval Air Integrated Logistic Support Center (NAILSC); Naval Weapons Engineering Support Activity (NWESA); NAVAIRSYCOM representatives, Norfolk and San Diego; COMNAVAIRLANT and COMNAVAIRPAC; and the various Naval Air Rework Facilities (NARFs).

The Uniform Data Base (UDB) of the NALDA System includes Naval aviation 3M data, NARF maintenance data, Technical Directive Status Accounting data selected Safety Center data. It is oriented toward aviation maintenance analysis at present. Expansion is planned to include other aviation logistic support elements, such as ground support equipment and engine management. Further expansion to integrate with the Aviation 3M operation and the Aviation Supply Office will be explored.

The NALDA System does not, in itself, provide management of maintenance or of problem identification, reporting or correction. Its purpose is to serve as a central tool for management of such actions. Currently NALDA supports S3, F14, A6, A7, P3, E2, A4, and CH-53 aircraft. Recently activated, it is being gradually expanded to include additional types of aircraft.

Physically located at the Harry Diamond Laboratories, the NALDA System is under the cognizance of AIR-401E.

APPENDIX XII

ENGINEERING INVESTIGATION PROGRAM (EIP)

The EIP provides an investigative process for determining the scope and depth of fleet material and equipment deficiencies reported through the Unsatisfactory Material/Condition Report (UR) System of the Naval Aviation Maintenance Program (NAMP). It may be applied to all service aircraft and weapon systems, and their included subsystems, equipments, components, related ground support equipment and special tools and materials used in their operation. EIP provides, according to the terms of its governing directive, "for engineering assistance to any fleet equipment problem".

Under this program an engineering investigation may be requested by TYCOMs, the NAVAIRSYSCOM representative Norfolk or San Diego, Naval Plant Representative Office, NAVAIR, or an aircraft mishap board. Maintenance engineering cognizant field activities (MECFA), are tasked with conducting the investigations, and in time may request assistance from a Navy technical facility or contractor facility. Major equipment, engine and weapon system MECFA's are listed in the OPNAV directive for the NAMP.

Findings of engineering investigations are reported directly to the requesting activity, with information copies provided to other activities concerned with aviation maintenance and support. Any action taken as a result of the investigation is initiated by the activity having cognizance over the equipment/material in question.

The EIP does not provide a problem identification, reporting or management system, nor is it intended to do so. It does provide solutions for problem and deficiency correction, and thus enables management to positively exert controls.

The EIP operates under NAVAIRINST 47305A with AIR-411 having cognizance.

APPENDIX XIII

PROJECT INTERCEPT

Project INTERCEPT utilizes a statistical analysis of Fleet maintenance experience, as reported through the Maintenance Data Collection System (MDCS), to detect potential equipment performance and logistic support problems. It establishes monitoring techniques and responsibilities and provides feed-back on remedial actions taken. Data collected under MDCS is provided periodically to designated field activities of the SYSCOM, which in turn calculate indicators of Reliability, Maintainability, and Availability quarterly. At the same time, the Fleet Material Support Department, Mechanicsburg, Pennsylvania, computes a series of Logistics Support Performance (LSP) indicators, quantifying the logistics factors affecting equipment maintenance performance. The indicators employed are mean time between corrective maintenance actions, mean time to repair, mean down time, availability, number of safety maintenance items, repair parts not in stock and repair parts not carried.

From the foregoing it is evident that Project INTERCEPT is not designed to directly detect operational problems or deficiencies. However, for potential application to correction of EME effects deficiencies and problems, it would be useful in monitoring, tracking, and if necessary, improving corrective actions. An action activity for correction of maintenance/logistic deficiencies is assigned, to investigate and if needed, take action to correct problems. In maintenance actions, the SYSCOM having cognizance over the equipment involved makes the assignment; for repair parts support, COMNAVSUPSYSCOM makes the assignment. INTERCEPT reports are formalized by the governing and implementing directives. NAVMATINST 4790.24 sets forth the concept of Project INTERCEPT which in turn is implemented by directives of cognizant SYSCOMS.

APPENDIX XIV

SURFACE MISSILE SYSTEM/DEFICIENCY CORRECTIVE ACTION PROGRAM (SMS/DCAP)

The SMS/DCAP is a semiautomated problem management system for in-service engineering and logistic support of designated weapons support systems. It represents one of the major support capabilities provided by the Naval Ship Weapon System Engineering Station (NWSES), Point Hueneme, California. Organizationally, SMS/DCAP is located within the Systems Effectiveness and Assurance Department, NWSES Code 0740, and is administered by the SMS/DCAP Primary Problem Manager. Deficiencies and problems are received through a variety of media, including CASREPTs, CONARs, SQAT/SAT reports, OPNAV 4790.2K reports and direct message and letter reports. After formalization into the system, problems are referred by the Primary Problem Managing Departments to Action Codes, either in-house or off-station engineers, systems analysts and logisticians for resolution and correction. Formal problem descriptions and applicable solutions are provided to the Data Processing Department for production of SMS/DCAP outputs and storage in the computer. Then, the SMS/DCAP system operates on a closed-loop basis; the process being initiated when a Fleet unit first reports a problem impairing the performance or operational effectiveness of a system, and the loop being closed upon distribution of teh SMS/DCAP output - the problem solution or status of the solution-in-progress - to the originator of the deficiency report and all holders of like equipment. Status reporting is continued until a fix or correction is available for Fleet installation.

At present SMS/DCAP has cognizance over more than a dozen major U.S. and foreign operational weapons support systems and equipments. It provides deficiency problem information to 276 combatant, amphibious, and auxiliary ships of the U.S. Navy; in addition to SMS-equipped ships of eight allied nations.

APPENDIX XV

AIRBORNE WEAPONS CORRECTIVE ACTION PROGRAM (AWCAP)

The AWCAP is a semiautomated system for quick response to corrective action requirements for airborne weapons systems. It was established in 1970 as part of the Naval Air Systems Command management information system at the Pacific Missile Test Center (PMTC) Point Mugu, California. Organizationally it is located within the Fleet Weapons Directorate, PMTC Code 2000, and is administered by the Systems Analysis Branch, PMTC Code 2243.

Inputs to the system, informing of deficiencies or problems, originate through various channels. Fleet units may report problems through the Engineering Investigation Program (EIP), the Quality Deficiency Reporting (QDR) Program, and the Safety Reporting Program under the provisions of OPNAVINST 4790.2A. Performance of air-launched guided missiles is reported through the standard air-launched (guided weapon system performance) reports (ALREPs). Also, deficiencies and problems are identified in the course of Integrated Logistic Support Management Team (ILSMT) reviews and Integrated Weapon System Reviews (IWSR).

Inputs to the AWCAP system are received by the PMTC Fleet Liaison Office where they are screened and disseminated for action. The AWCAP Support Group, in turn, extracts problems from source inputs, and passes them to the cognizant Weapons Systems Managers (Code 2100). These Managers then assign the corrective action to either in-house or off-station activities for solution and correction, and prepare reports in format for insertion into the AWCAP Management Action Reporting System (MARS). MARS is a computer-based system which consolidates inputs and provides reports for review and for feed-back to the Fleet unit and to other AWCAP participants. All active AWCAP managed problems are reported monthly and quarterly, summarizing progress and status.

Although AWCAP input/output procedures are well established, they are flexible in format. The system is highly interactive and handles data efficiently. However, it permits the exercise of technical and managerial discretion at all decision points.

APPENDIX XVI

ELECTROMAGNETIC SYSTEMS OPERATIONAL READINESS TESTING (EMSORT) SYSTEM

The EMSORT system has been developed by the Naval Underwater Systems Center (NUSC), New London, Connecticut, under the direction of NAVELEX (PME-107). The purpose is to determine whether submarine Electronic Warfare Support Measures (ESM) systems are operating according to specifications, and to quantify the actual performance levels of both operational and developmental ESM systems. This is accomplished by providing a precisely known electromagnetic field in the area of the submarine antenna under test. The equipment as developed by NUSC, located in a mobile van with an affixed transmitting antenna, radiates a signal in the direction of the submarine antenna under test.

The EMSORT system itself is not specifically designed to detect or assist in the correction of EME effects problems. However, as in the case of other programs and systems described in this annex, it would be amenable to adaptation for such purposes, uniquely for submarines.

APPENDIX XVII

NAVAL ELECTRONICS SYSTEMS COMMAND FLEET LIAISON PROGRAM

The NAVELEX Fleet Liaison Program was developed to ensure rapid response to Fleet requests for assistance in correcting problems in electronics systems and equipments. The operational maintenance support and assistance afforded by this program is supplementary to that provided through Type Commanders and Mobile Technical Units.

The Fleet Liaison Program operates through the four NAVELEX Fleet Liaison Offices, located at the Naval Electronic Systems Engineering Centers, Charleston, Portsmouth, Vallejo, and San Diego. These four offices provide points of contact for Fleet units. Technical assistance requests for NAVELEX-cognizant equipments can be made directly to these offices, which then investigate and evaluate the problems. Through Fleet Liaison follow-on, corrective action is recommended, initiated and coordinated. Requests for assistance are initiated and processed in accordance with existing Fleet instructions. Requests for those equipments determined to be not within the purview of the NAVELEX Fleet Liaison office are accommodated within directives of COMNAVSURFLANT and COMNAVLOGPAC. However, the Fleet Liaison Offices will assist in locating required technical capabilities if not otherwise known to a requesting Fleet unit.

The NAVELEX Fleet Liaison Program assists the Standard Measurement Program, the Combat Systems Readiness Review, the Combat Systems Readiness Test, the Direct Equipment Exchange Program, the Electronics Examining Board (for aircraft carriers) and the Field Change Installation Program. The Fleet Liaison Program is administered by the Logistics Directorate, NAVELEXSYSCOM (ELEX-04). Direction for the program is provided by the NAVELEXSYSCOM Fleet Support Manual, issued 3 January 1978.

ANNEX C

INTEGRATED LOGISTIC SUPPORT (ILS) IMPLICATIONS

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The implementation of ILS functional controls within each phase of the EME in-service program will provide for integration into on-going ILS programs. Plans will include direct action in the following areas:

1. Integrated Logistics Support Management Team (ILSMT)

The deployment/operational phase of systems and equipments is characterized by the operation of the support system in the deployed environment and the continuous evaluation of its performance. The support performance can be best measured by the effectiveness with which the equipment/system performs in relationship to its dependency on the complete support system. As new or unplanned support problems are revealed, action must be taken to solve the problems in an integrated manner. Thus, potential improvements in the support system can be identified, evaluated, and implemented as appropriate. ILS can assess recurring EME requirements through ILSMT meetings, monitoring the Engineering Proposed (ECP) process, verifying support, updating Maintenance Plans/ILSPs/OLSPs, testing and review of system supportability, initiating phase-out plan, determining production status, continuing maintenance engineering liaison with the Fleet, review and MDCS reports and URs/UMRs, and evaluating deficiency reports. Participation of the EME representative in ILSMT proceedings must be continuing and entail close review of plans and procedures, support/test equipment, critical provisioning support, logistics support analysis and logistics modeling/policies as relates to EME deficiencies. The following are considerations:

a. Weapon System Planning Document (WSPD) - Perform WSPD reviews to determine required maintenance engineering deficiencies statements or areas of potential improvement. A log of suggested EME improvements will be maintained for consolidation revisions to the WSPD are planned.

b. Maintenance Plans - The specific EME need to update Weapon System Maintenance Plans, based upon individual in-service experience in maintenance engineering as developed through deficiency corrections will be addressed.

c. Integrated Logistic Support Plan (ILSP) - Changes addressing EME effects will be developed, reviewed and specified in ILSP documents, and incorporated in the course of each revision.

d. Operational Logistic Support Plan (OLSP) - OLSP update recommendations will be based on weapon system EME problems experience indicating a need to reevaluate test equipment designs, usage and availability.

2. Engineering Change Proposals (ECP)

Review of EME effects problems in consonance with established configuration management procedures will be made. Direct involvement in the procedures for processing ECP actions must be maintained. Comment and recommendation imputs to the formal ECP review cycle will be provided for EME matters. EME effects ECPs will be required. Ideally, a maintenance logistics EME impact analysis should be conducted.

3. Technical EME Effects Coordination

Technical coordination and liaison will be maintained to contribute EME effects specific support through participation in ILS meetings. The major contribution will be based on EME effects engineering experience gained during the in-service phase of operational systems and equipments. This effort will correlate with ILS standard review procedures, emphasizing EME effects techniques, equipments, and problem experiences.

4. EME Effects-Related Provisioning Support

Solution to many EME problems will on occasion require critical material within the standard Fleet provisioning cycle. Support to provisioning planning, control and evaluation for EME effects deficiency corrections will require participation in this cycle.

Provisioning conferences are held to make decisions which enable identifcation of an adequate range and quantity of spares and repair parts required for logistic support at the organizational, intermediate, and depot levels of maintenance. Technical manuals, training and associated technical data and ground support equipment required for logistic support are also identified. Specific EME input will be required for the following areas of control.

a. Spares/Repair Parts Order - The program support inventory control point (PSICP) computes quantitative requirements, establishes master technical records and develops and transmits the spares/repair parts order to the contractor.

b. Initial Outfitting List (IOS)/Allowance Parts List (APL) - PSIC prepares and distributes the IOL and/or APL to user activities.

c. Spare/Repair Parts Positioning - PSIC allocates and the contractor ships all material to destinations.

5. Logistics Support Analysis

EME effects control planning commences with the definition of the system characteristics and is a major factor for consideration in the early stages of program initiation. During the ILS planning process, logistic requirements are determined by logistic support analysis (LSA) and documented in the LSA record (LSAR). The LSAR identifies the most cost-effective set of logistic resources which are compatible with the proposed system design. Based on analysis it shall be the EME participant responsibility to evaluate the requirements for planning revisions or extensions for the following factors:

a. Revision logistic resource requirements based on the verification of selected maintenance procedures.

b. Assurance that individual actions relating to each ILS program element are adequately interfaced with the complement actions taken in related EME effect problem areas.

c. Control of systems modifications as concerns maintenance engineering changes, problem areas, and pending solutions to correct EME effects problems.

d. Spare and repair parts usage related to EME effects.

e. Modifications to mission profile, system/equipment configuration, funding and maintenance policy.

As a requirement for EME participation in Logistics Support Analysis the following documents are specified as review requirements.

a. Maintenance Engineering Analysis (MEA) - MEA data for assigned systems must be obtained and kept current and critical reviews and specific change requirements based upon EME maintenance engineering experience must be provided.

b. Level of Repair Analysis (LORA) - Obtain and maintain LORA data for assigned weapon systems and provide critical reviews and specific change requirements based upon EME Maintenance Engineering experience.

6. Logistics Modeling and Policy Formation

Advanced logistics planning via modeling/simulation methods can expose weak links related to EME controls. The use of models to redirect logistics/maintenance engineering policies must be monitored from the viewpoint of EME risks and problem solution. For this purpose, the following actions are necessary:

a. Analysis of system and equipment logistics pipelines will be reviewed as required to define EME maintenance engineering problems and their solutions. Participation in analysis will be as needed to update, revise or refine systems effectiveness models used to establish maintenance plans, and in turn reveal specific potential EME in-service problem factors.

b. EME phenomena as model parameters will be identified and introduced in systems effectiveness simulations to reflect additional risk of EME effects to Fleet operational success.

ANNEX D

REFERENCES

ANNEX D

REFERENCES

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ANNEX E

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

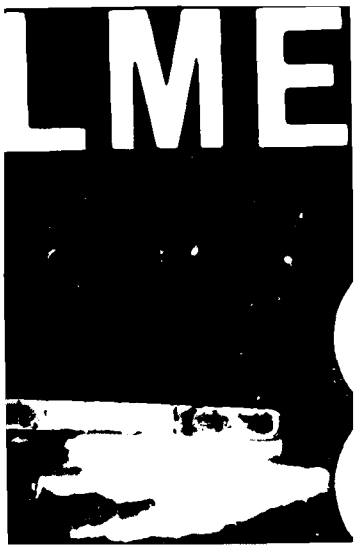
ANNEX E

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ADCNM	Assistant Deputy Chief of Naval Material
ADP	Automated Data Processing
ALREP	Air-Launched Guided Weapons System Performance Report
APL	Allowance Parts List
AWCAP	Airborne Weapon Corrective Action Program
CASCAN	Casualty Cancellation Report
CASCOR	Casualty Correction Report
CETS	Contract Engineering and Technical Services
CASREPT	Casualty Report
CONAR	Commanding Officer's Narrative Report
CSRR	Combat Systems Readiness Review
CSRT	Combat Systems Readiness Test
DART	Detection, Action, and Response Technique
DEM	DART Equipment Manager
DFS	Direct Fleet Support (Program)
DSARC	Defense Systems Acquisition Review Council
ECAC	Electromagnetic Compatibility Analysis Center, Annapolis, Maryland
ECP	Engineering Change Proposals
ECCM	Electronic Counter-Countermeasures
ECM	Electronic Countermeasures
EEI	Electrical Electromagnetic Interference
EIP	Engineering Investigation Program
EM-Safety	Electromagnetic Safety
EMC	Electromagnetic Compatibility
EMCON	Emission Control

EME	Electromagnetic Environment
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EMSORT	Electromagnetic Systems Operational Readiness Testing
EMV	Electromagnetic Vulnerability
ESM	Electronic Warfare Support Measures
FACI	First Article Configuration Inspection
FBR	Feedback Report
FEMR	Fleet Electromagnetic Readiness (Program)
GLAT	Government Lot Acceptance Test
IEM	Inactive Equipment Maintenance (Program)
ILS	Integrated Logistics Support
ILSMT	Integrated Logistics Support Management Team
ILSP	Integrated Logistics Support Plan
IMA	Intermediate Maintenance Activity
INSURV	Board of Inspection and Survey
IOL	Initial Outfitting List
ISEA	In-Service Engineering Agent
ISIC	Immediate Superior in Command
IWSR	Integrated Weapon System Review
LSA	Logistic Support Analysis
LSAR	Logistic Support Analysis Record
LORA	Level of Repair Analysis
MARS	Management Action Reporting System
MDCS	Maintenance Data Collection System
MDS	Maintenance Data System
MEA	Maintenance Engineering Analysis
MECFA	Maintenance Engineering Cognizant Field Activity
MIP	Maintenance Index Page
MOTU	Mobile Technical Unit
MSOD	Maintenance Support Office Department, Mechanicsburg, Pennsylvania
NAVELEXSYSENGCEN	Naval Electronics System Command Engineering Center
NAVMMAC	Navy Manpower and Material Analysis Center

NAVSEACENLANT	Naval Sea System Support Center, Atlantic Fleet
NAVSEEAPAC	Naval Shore Electronic Engineering Activity, Pacific Fleet
NETS	Naval Engineering Technical Services
NOIMS	Naval Ordnance Information Management System
NWSES	Naval Ship Weapon Systems Engineering Station
O&MN	Operations and Maintenance, Navy
OLSP	Operational Logistic Support Plan
OPEVAL	Operational Evaluation
PERA	Planning and Engineering for Repair and Alterations Activity
PMS	Planned Maintenance System
PMTC	Pacific Missile Test Center
POT&I	Pre-Overhaul Test and Inspection
PSIC	Program Support Inventory Control Point
QDR	Quality Deficiency Reporting (Program)
SECAS	Ship's Equipment Configuration Accounting System
SEMCIP	Shipboard Electromagnetic Compatibility Improvement Program
SITREP	Situation Report
SLD	Ship Logistic Director
SMS/DCAP	Surface Missile System/Deficiency Corrective Action Program
TECS	Tactical Electromagnetic Coordination and Support
TYCOM	Type Commander
UR	Unsatisfactory Material/Condition Report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